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NEWS MEDIA CONTACTS:
Keith Arterburn, 208-351-2999 (cell), keith.arterburn@inl.gov
Reuel Smith, 208-521-4910 (cell), reuel.smith@inl.gov

INL, Teledyne Isco sign water sampling technology licensing agreement

IDAHO FALLS -- The U.S. Department of Energy's Idaho National Laboratory and Teledyne Isco today signed a licensing agreement that provides exclusive rights to Teledyne Isco for further development and marketing of the Water Sample Concentrator (WSC), a new technology tool that will help in evaluating water supplies suspected of being contaminated.

A patent-pending technology developed jointly by U.S. EPA's National Homeland Security Research Center (NHSRC) in Cincinnati and INL, WSC integrates and automates the field process of collecting water samples and laboratory process of concentrating microorganisms in water, providing a way to easily transport field samples to a laboratory for testing water for biohazards, chemicals, toxins, viruses, bacteria and potentially dangerous protozoa.

Jonathan Herrmann, director, EPA's NHSRC, said, "We are very enthused about this technology. It adds significant capability to test water for harmful contaminants."

Noting the key advantages of WSC, INL Project Manager Mike Carpenter said, "We can portably and remotely collect and concentrate test samples much more quickly than before. Normally, this testing requires about a 27-gallon water sample, which weighs over 200 pounds. In the past, this large amount of water needed to be transported to a laboratory for concentration and testing."

Operating in the field, the WSC reduces the sample volume 200- to 400-fold to a concentrated, easily transportable sample size of less than 2 cups, weighing less than a pound.

EPA scientist Alan Lindquist said, "There has been a long-standing need for a portable device to effectively reduce the volume of large samples in the field, while preserving the microorganisms for analysis. This technology should enable increased security from potential terrorist or criminal attacks, and also increase the capabilities of water utilities to demonstrate the safety and quality of their water during normal operations."

Carpenter said, "Alan Lindquist and Vicente Gallardo of the EPA's National Homeland Security Research Center conceived the new process. INL's role was to make it a reality by developing the technology."

In addition to homeland security applications, this device may be suitable for use in routine water quality testing. Public water providers are required to test for several microbiological contaminants in drinking water and some systems conduct additional testing to ensure the quality and safety of the drinking water they supply. This water concentrator may facilitate that testing and provide a convenient mechanism for drinking water testing, while ensuring that water providers have access to equipment for use in homeland security applications as well.

In deciding to license the WSC, "Teledyne Isco is responding to growing market needs," said Teledyne Isco's Director of Innovation, Mike Metcalf. "The WSC technology not only complements our existing products, but allows us to expand into new environmental market opportunities," he added. Teledyne Isco's exclusive, global license is for the life of the patent.

The National Homeland Security Research Center (NHSRC) is the organization within the U.S. Environmental Protection Agency that addresses the research and development needs of EPA in fulfilling its homeland security mission. EPA is the lead federal agency responsible for ensuring the security of the nation's drinking water. The NHSRC has an active research and development program and works closely with EPA's Office of Water, and other groups within the drinking water infrastructure system. Alan Lindquist and Vicente Gallardo are located at EPA's Andrew W. Briedenbach Environmental Research Center in Cincinnati, Ohio. The Cincinnati facility has long been a pioneer in EPA's drinking water-related research programs.

Teledyne Isco, an operating unit of Teledyne Technologies, specializes in instrumentation for water and wastewater sampling and flow measurement. Located in Lincoln, Neb., Teledyne Isco is the world leader for the design manufacture and distribution of automatic collection devices used to sample water and wastewater for subsequent laboratory analysis.

Idaho National Laboratory is one of the U.S. Department of Energy's 10 multiprogram national laboratories. The laboratory performs work in each of the strategic goal areas of DOE – energy, national security, science and environment. INL is the nation's leading center of nuclear energy research and development. Day-to-day management and operation of the laboratory is the responsibility of Battelle Energy Alliance.

Key Innovations and Advantages of the Water Sample Concentrator

The WSC automates laboratory sample concentration processes and makes them portable, so that they can be performed reliably in the field at a fraction of the cost of old water quality collection and transport methods.
Important innovative features include:
• Saves time – Integrates sample collection and concentration processes, reducing the time it takes to determine pathogen content and population. One hundred liters of water sample can be processed and concentrated in about an hour.
• Reduces costs – Equipment and system refresher kits are inexpensive, and portability to the sampling site drastically reduces the sample volume

that has to be transported and processed.
• Saves labor and adds convenience – Reduced volumes minimize strain on those who are collecting and handling the samples, and automated processes allow operators to tend to other matters while the samples are being concentrated.
• Improves accuracy and consistency – Concentrating fluid samples assures highly diluted pathogens will be identified, and automating processes that traditionally have been performed manually in the laboratory improves consistency between samples.
• Turnkey – Instrumentation/controls allow operation with minimal set up and training.
• Real-time status monitoring – Computer screen provides a virtual display of the filtration process, allowing operators to monitor the status and respond quickly if there are operational problems or adjustments need to be made.
• Safe – Hands-free operation and bio-containment assure operators and handlers are not exposed to high concentrations of toxic organisms.
• Samples do not come in contact with the interior of the pump. Equipment pieces that do come in
• Eliminates cross-contamination – Samples do not come in contact with the sample are small, inexpensive, and disposable, and can be bagged and used as forensic evidence.
• Environmentally Friendly – Returns only clean water to the environment. Most parts can be quickly and easily decontaminated for reuse, if desired.

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